

Unit D

Energy and the Environment

There are many kinds of farms in Alberta, and each one relies on solar energy in some way. Unlike most farms, this wind farm near Pincher Creek does not involve photosynthesis or the food chain. The turbines mounted on the tall towers are used to harvest wind—the kinetic energy of the atmosphere—and transform it into electrical energy. What role does solar energy play in this operation? Why is Pincher Creek ideally situated for this kind of development?

Radiation from the Sun causes Earth's surface to heat unevenly, resulting in surface winds. The rotation of the planet causes these winds to blow from the western parts of Canada toward the eastern parts. Although the Rocky Mountains form a barrier to the prevailing westerly winds, gaps in the mountains can create natural wind corridors. At Crowsnest Pass, the energy from the prevailing winds is funnelled toward Pincher Creek, making this area an ideal location for wind farms.



Compared to other methods of generating electrical energy, wind turbines are relatively quick and inexpensive to set up and appear to have a negligible impact on the environment. As you have learned in previous units, the same cannot be said for other methods of generating electrical energy. People around the world seem to have an increasing need for energy; and yet, evidence is mounting that the biosphere cannot sustain activities that produce energy at the expense of the environment. In this unit you will examine methods used to produce energy and consider how they can be used to balance the need for human progress with environmental stewardship.



What You Will Cover

Chapter 1: Dreams of Limitless Energy

- 1.1 Energy on Demand
- 1.2 Solar Fuel from the Past
- 1.3 Harvesting Chemical Energy
- 1.4 Harvesting Nuclear Energy

Chapter 2: Dreams of a Sustainable Future

- 2.1 Describing Sustainability
- 2.2 The Many Forms of Solar Energy